Chronoamperometric Cu(II) Analysis at Gold Ultramicroelectrodes in Concentrated Sulfuric Acid Solutions

H. Gómez^{1,*}, G. Riveros², D. Ramírez²

¹ Instituto de Química, Pontificia Universidad Católica de Valparaíso, Avda. Universidad 330, Curauma, Valparaíso, Chile.

² Instituto de Química y Bioquímica, Facultad de Ciencias, Universidad de Valparaíso, Avda. Gran Bretaña 1111, Playa Ancha, Valparaíso, Chile.

*Email: humberto.gomez@pucv.cl

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Chronoamperometric analysis of Cu (II) ion concentration at a gold ultramicroelectrode (UME) is reported. An appropriate potential/time program was selected after the analysis of the corresponding j vs t transients in order to establish a defined value in the limiting current for analytical purposes. Good linearity between Cu (II) concentration and the stationary stripping current was obtained in the concentration of 5 g dm⁻³ to 150 g dm⁻³ range. Moreover, interference effects from sulfuric acid in a wide concentration range and from additives such as thiourea and glue showed that they do not affect the linearity between the stationary current values and Cu(II) concentration. These results could be adapted for the chronoamperometric detection of Cu(II) in on-line measurements in industrial copper refining electrolytes.

Keywords: copper analysis, chronoamperometry, ultramicroelectrodes, industrial electrorefining electrolytes.

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